

WEST

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L22: Entry 5 of 9

File: USPT

Oct 17, 2000

DOCUMENT-IDENTIFIER: US 6134455 A

TITLE: Annunciating apparatus, and associated method, for radio communication device

Abstract Text (1):

Annunciator apparatus, and an associated method, for a mobile station, such as a radio telephone operable in a cellular communication system. When a call is to be terminated at the mobile station, a determination is made of the ambient noise levels proximate to the mobile station. Responsive to the determinations of the ambient noise level, selection is made of the loudness level of the ringing tone to be generated by an annunciator, used to announce the terminating call. Thereby, the loudness level of the ringing tone generated by the annunciator is of a loudness level appropriate for the conditions at which the mobile station is positioned.

Assignee Name (1):Nokia Mobile Phones LimitedAssignee Group (1):Nokia Mobile Phones Limited Espoo FI 03Brief Summary Text (1):

The present invention relates generally to radio devices, such as a radio telephone, operable in a radio communication system in which a call can be terminated at the radio device. More particularly, the present invention relates to annunciating apparatus, and an associated method, which announces, e.g., with an intermittent ringing tone, an incoming call to be terminated at the radio device. The loudness of the ringing tone, or other magnitude level of the annunciation is selectable.

Brief Summary Text (2):

The magnitude level of the annunciation is a function of the ambient noise levels proximate to the radio device. When, for example, the incoming call is annunciated by a ringing tone, the loudness of the ringing tone is dependent upon the ambient noise levels. At higher levels of ambient noise, the ringing tone is caused also be louder, thereby to remain noticeable over the ambient noise. Through operation of an embodiment of the present invention, the ringing of the radio telephone is caused to be of an appropriate loudness. When there is only a low level of ambient noise, the ringing is of a relatively low loudness level. Thereby, a user of the radio telephone is able to hear the ringing, but the ringing is not inappropriately loud. And, when there is a high level of ambient noise, the loudness of the ringing is increased to

a level to permit a user to hear the ringing over the ambient noise.

Brief Summary Text (7):

A user communicates with the infrastructure of a cellular communication network through the use of a radio telephone, sometimes referred to as a mobile station. The mobile station receives down link signals on a forward link and transmits up link signals on a reverse link. Thereby, two-way communications are provided between the infrastructure of the cellular network and the mobile station.

Brief Summary Text (18):

In an exemplary implementation, the annunciating apparatus of an embodiment of the present invention forms a portion of a cellular radio telephone operable in a cellular radio communication system. The cellular communication system includes network infrastructure coupled to a PSTN (public-switched telephonic network). When a call is initiated by a calling party to be terminated at a particular radio telephone, the network infrastructure causes a paging signal to be transmitted to the radio telephone. The paging signal is transmitted to inform the radio telephone of the call which is to be terminated at the radio telephone. Responsive to detection of the paging signal at the radio telephone, the ambient noise levels proximate to the radio telephone are determined. Selection is made of the loudness level at which to generate a ringing tone to announce the incoming call to the user of the radio telephone. The user of the radio telephone is thereby able to accept the call and effectuate communications by way of the radio telephone.

Brief Summary Text (19):

In one implementation, the speaker of the transmitter portion of the radio telephone is utilized to determine the ambient noise levels. When the paging signal is received at the radio telephone, ambient noise levels are determined during a selected time period subsequent to reception of the paging signal. The audio energy transduced by the speaker during the selected time period is determinative of the ambient noise levels proximate to the radio telephone. The loudness level of the ringing tone subsequently to be generated at the radio telephone is selected responsive to such transduced audio energy. As a result, a user of the radio telephone is able to hear the ringing tone generated at an appropriate loudness level. At increased levels of ambient noise, the ringing tone is caused to be of a relatively loud level. And, at low levels of ambient noise, the ringing tone is caused to be of a relatively low loudness level.

Detailed Description Text (7):

The receiver circuitry 42 is coupled to a speaker 46. The speaker 46 is operable to generate audio signals representative of signals received and processed by the receiver circuitry 42. In an implementation in which the mobile station 12 forms a portable radio telephone, the speaker 46 is positioned at hand set portion of the radio telephone positionable proximate to an ear of a user of the radio telephone.

Current US Cross Reference Classification (3):

379/375.01

CLAIMS:

6. The apparatus of claim 5 wherein the radio telephone includes a processor, wherein said ambient noise level determiner comprises an algorithm executable by the processor, and wherein said annunciation signal level selector comprises an algorithm executable by the processor.

7. The apparatus of claim 1 wherein the radio device comprises a radio telephone, wherein the paging signal is transmitted to the radio telephone to be received thereat to indicate a call to be terminated at the radio telephone and wherein the annunciation signal generated by said annunciation signal level selector operates at the end of said predetermined time interval to announce the call to be terminated at the radio telephone.

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L22: Entry 7 of 9

File: USPT

Apr 12, 1994

DOCUMENT-IDENTIFIER: US 5303284 A

TITLE: Ringing circuit for use in portable telephone setAbstract Text (1):

A portable telephone set having a ringing circuit for producing different ringing tones depending upon the use mode of the portable telephone set, a portable mode or a mobile mode. The ringing circuit comprises a mode detecting circuit for detecting the use mode, an internal loudspeaker housed in a housing of the portable telephone set for producing a first ringing signal when the portable telephone set is in the portable mode, an external loudspeaker connected externally of the housing for producing a second ringing signal when it is in the mobile mode and a ringing tone generator for generating a first and a second ringing tones for driving the respective loudspeakers producing first and second ringings. The first and second ringing tones have frequency spectra compatible with frequency characteristics of these loudspeakers to produce the respective ringings efficiently. The ringing signal generator may be a single ringing tone generating circuit producing two kinds of ringing tone or may be comprised of two different ringing tone generating circuits.

Brief Summary Text (2):

The present invention relates to a portable telephone set and, more particularly, to a portable telephone set having a ringing circuit and to be used in a portable mode and mobile mode.

Brief Summary Text (3):

There has been known a portable telephone set which has two use-modes, i.e., a portable mode in which the telephone set is used by a user while bringing it with him and a mobile mode in which it is mounted on a vehicle. In the portable mode, a compact and light-weight, built-in loudspeaker is used. In the mobile mode, a relatively large external loudspeaker is used because the loudspeaker outputs not only a ringing tone but also a voice signal and thus the voice quality therefrom plays an important role.

Brief Summary Text (7):

An object of the present invention is, therefore, to provide a ringing circuit for use in a portable telephone set which circuit is capable of producing an effective ringing sound for either an internal or external loudspeaker thereof to be used.

Brief Summary Text (8):

Another object of the present invention is to provide a ringing circuit for use in a portable telephone set which circuit automatically switches internal and external loudspeakers based on

the use conditions of the portable telephone set.

Brief Summary Text (9):

According to the present invention, there is provided a portable telephone set having two use-modes, portable mode and mobile mode, and includes a mode detecting circuit for detecting the use-modes. Upon a call from a base station, a ringing circuit of the portable telephone set generates a ringing sound from an internal loudspeaker thereof when the portable mode is detected or from an external loudspeaker when the mobile mode is detected. In the portable mode, the ringing circuit produces a first ringing signal having a frequency spectrum adjusted to frequency characteristics of the internal loudspeaker and, in the mobile mode, produces a second ringing signal having a frequency spectrum adjusted to frequency characteristics of the external loudspeaker. The ringing circuit may include two ringing signal generating circuits which generate the first and second ringing signals, respectively. Further, the ringing circuit may include a single ringing signal generating circuit which generates the first or second ringing signal depending upon the use-mode detected. When the external loudspeaker is connected to the telephone set, an input terminal of the mode detecting circuit is grounded simultaneously and this grounding signal can be used as the detection signal of the mode detection circuit.

Drawing Description Text (3):

FIG. 1 is a schematic block diagram showing a portable telephone set according to an embodiment of the present invention;

Drawing Description Text (4):

FIG. 2 is a flowchart explaining the call reception operation of the FIG. 1 portable telephone set;

Detailed Description Text (2):

In FIG. 1, a portable telephone set 10 can be carried by the user or mounted on a vehicle. The telephone set 10 has an antenna 1 picking up a radio frequency (RF) signal and radiating an RF signal. The antenna 1 may be replaced by or switched to a vehicle-mounted antenna when the telephone set 10 is mounted on the vehicle. The picked-up RF signal is supplied to a receiver portion 3 through an antenna duplexer 2. The receiver portion 3 demodulates the received RF signal to produce an audio frequency (AF) signal which may include a voice signal and a data signal. The voice signal is supplied to a speaker/microphone portion 5 to be outputted from a speaker circuit 12 or a handset 14 therewithin. The handset 14 may include an earpiece receiver and a mouthpiece microphone. The data signal is supplied to both a call detector circuit 7 and a control circuit 9.

Detailed Description Text (8):

In FIG. 2, the portable telephone set 10 waits at step S11 for a call coming through a so-called paging channel which is one of control channels for broadcasting calling signals and various control signals from a base station to portable or mobile telephone sets. If the telephone set 10 receives a calling signal addressed thereto at step S12 and detects it with the call detect circuit 7, the control circuit 9 causes the signal generator 6 to generate a

response signal. The control circuit 9 further causes the transmitter portion 4 to transmit at step S13 the response signal to the base station. Thereafter, the control circuit 9 checks at step S14 if it receives a channel designate signal indicating a designated speech channel. If the control circuit 9 does not receive the channel designate signal within a predetermined period of time, the operation returns to step S11. Otherwise, the control circuit 9 causes the receiver and transmitter portions 3, 4 to tune to the designated speech channel at step S15.

Detailed Description Text (24):

As described hereinbefore, the ringing circuit of the portable telephone set according to the present invention includes the ringing tone generators for generating the first and second ringing tones whose frequencies are set to be suitable to frequency characteristics of the internal loudspeaker to be used in the portable mode and of the external loudspeaker to be used in the mobile mode, respectively. The ringing tone is selected according to the use mode of the telephone set in which the associated loudspeaker is actuated. Therefore, it is possible to utilize the ringing tone effectively in either mode and to provide maximum ringing with minimum power consumption.

Current US Cross Reference Classification (1):

379/375.01

CLAIMS:

1. A portable telephone set comprising:

means for receiving a radio frequency signal to produce a received signal;

means for detecting a calling signal out of said received signal to produce a calling signal detection signal;

mode detecting means for detecting the use mode of said portable telephone set to produce portable-mode and mobile-mode signals when said telephone set is in portable and mobile modes, respectively;

an internal loudspeaker housed in said portable telephone set;

an external loudspeaker having a frequency characteristic different from that of said internal loudspeaker and adapted to be connected to a first connector provided on said telephone set when said portable telephone set is in the mobile mode; and

ringing signal generator means for generating a first ringing signal having a frequency spectrum corresponding to said frequency characteristic of said internal loudspeaker in response to said portable-mode signal and said calling signal detection signal and for generating a second ringing signal having a frequency spectrum corresponding to said frequency characteristic of said external loudspeaker in response to said mobile-mode signal and said calling signal detection signal.

2. A portable telephone set as claimed in claim 1, wherein said

ringing signal generator means comprises:

a first ringing signal generating circuit for generating said first ringing signal in response to said portable-mode signal and to said calling signal detection signal; and

a second ringing signal generating circuit for generating said second ringing signal in response to said portable-mode signal and to said calling signal detection signal.

3. A portable telephone set as claimed in claim 1, wherein said ringing signal generator means comprises:

a clock generator for generating a clock signal;

a frequency divider for frequency dividing said clock signal by a first ratio in response to said portable-mode signal and by a second ratio in response to said mobile-mode signal to produce first and second divided signals, respectively;

a counter for counting said first and second divided signals to produce first and second addresses, respectively;

a ROM for providing first and second pattern signals in response to said first and second addresses, respectively; and

an A/D converter for respectively converting said first and second pattern signals into first and second analog signals corresponding respectively to said first and second ringing signals.

4. A portable telephone set as claimed in claim 1, wherein said mode detecting circuit comprises a second connector provided on said telephone set and means for providing said mobile-mode signal when said second connector is grounded.

5. A portable telephone set as claimed in claim 4, wherein said second connector is grounded when said external loudspeaker is connected to said first connector.

6. A telephone set comprising:

means for receiving a radio frequency signal to produce a received signal;

means for detecting a calling signal out of said received signal to produce a calling signal detection signal;

mode detect means for detecting the use mode of said telephone set to produce a portable-mode signal when said telephone set is used as a portable set and to produce a mobile-mode signal when said telephone set is mounted on a vehicle;

first and second speaker means having first and second frequency characteristics, respectively;

first generator means responsive to said calling signal detection signal and to said portable-mode signal for generating a first

ringing tone suitable to said first frequency characteristic and supplying said first ringing tone to said first speaker means; and

second generator means responsive to said calling signal detection signal and to said mobile-mode signal for generating a second ringing tone suitable to said second frequency characteristic and supplying said second ringing tone to said second speaker means.

13. A telephone set comprising:

an internal loudspeaker;

a first terminal to be connected to an external speaker;

means for receiving a radio frequency signal to produce a received signal;

means for detecting a calling signal out of said received signal to produce a calling signal detection signal;

mode detecting means for detecting the use mode of said telephone set to produce portable-mode and mobile-mode signals when said telephone set is in portable and mobile modes, respectively; and

generator means responsive to said portable-mode and mobile-mode signals and said calling signal detection signal for generating first and second ringing signals, respectively, and providing said first and second ringing signals to said internal and external loudspeaker, respectively.

14. A telephone set as claimed in claim 13, further comprising a second terminal to be connected to ground when said telephone set is in said mobile mode, and wherein said mode detect means comprises: means for generating said portable-mode signal when said second terminal is not connected to ground and generating said mobile-mode signal when said second terminal is connected to ground.

15. A method of supplying a ringing signal to an internal loudspeaker built in a telephone set and to an external loudspeaker to be connected to said telephone set, comprising the steps of:

detecting a calling signal addressed to said telephone set to produce a calling detection signal;

detecting the use mode of said telephone set to produce portable-mode and mobile-mode signals when said telephone set is in portable and mobile modes, respectively;

responsive to said portable-mode and mobile-mode signals, generating portable-mode and mobile-mode ringing signals, respectively, the frequencies of said portable-and mobile-mode ringing signals being suitable to said internal and external loudspeakers, respectively;

responsive to said calling detection signal and to said portable-mode signal, supplying said portable-mode ringing signal

to said internal loudspeaker; and

responsive to said calling detection signal and to said mobile-mode signal, supplying said mobile-mode ringing signal to said external loudspeaker.

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L20: Entry 3 of 9

File: USPT

Sep 10, 2002

DOCUMENT-IDENTIFIER: US 6449359 B1

TITLE: Telephone identification calling apparatus and procedures

Brief Summary Text (2):

The invention relates to improvements in telephones, particularly but not exclusively cellular telephones and, more specifically, to a method and apparatus for permitting cellular telephones to be called by means of a customized call message in place of or in addition to the standard call ring, as desired by the cellular telephone owner. Furthermore, this invention relates to a method and apparatus for recognizing calling subscribers by means of a customized list and for being recognized by receiving subscribers by means of a customized outgoing message.

Brief Summary Text (4):

Cellular telephones are often used in public places, and several such phones may be present within a limited space, such as a restaurant, a bus or railway station, a waiting room of any kind, and so forth. As a result, it often occurs that ,several cellular telephones ring concurrently, and it is not always immediately clear from which one the ring issues, so that several persons pick up their phone and operate it in the expectation of hearing a message. This creates a degree of confusion and sometimes some embarrassment. In standard, non cellular telephones too the regular call ring may sometimes prove unsatisfactory. Though its intensity may be controlled to a certain degree, it may still prove to be a disagreeable sound and disturb sleeping children or sick persons.

Brief Summary Text (6):

It would be therefore highly desirable, and it is a purpose of this invention, to provide a system for assigning to each telephone, in particular, but not exclusively, a cellular telephone, an acoustic call of its own, in place of or in addition to, the standard ring.

Brief Summary Text (8):

It is a further purpose of this invention to provide such a system that does not require extensive and costly modification of the telephone, in particular the cellular telephone, itself, nor significant complications in its relationship with the telephone company and exchange with which the telephone is connected.

Brief Summary Text (17):

Hereinafter, the terms "caller" and "receiver" will respectively indicate the apparatus which sends a call and the apparatus which receives it. Persons using them will be called respectively "the calling subscriber" and "the receiving subscriber". Reference will always be made hereinafter, for purposes of illustration, to

cellular telephones, but it should always be understood that this is not a limitation, since the invention is equally applicable to standard, non-cellular telephones. In any case, even when the receiver is a cellular telephone apparatus, the caller may always be any kind of telephone apparatus.

Brief Summary Text (18):

In a normal operation of telephones, when a caller requests the telephone exchange to place it into a connection with a receiver, having a certain number, the exchange sends out a signal at the frequency assigned to the particular receiver--hereinafter called "a dial signal"--which activates a ring in the receiver. Typically, the ring is produced by a loudspeaker--hereinafter "the ring loudspeaker"--driven by an oscillating circuit. This circuit is normally open, and the call from the station--which may merely generate a pulse--causes it to be closed. The same call, generally, causes a display to be lighted on the receiver. Concurrently, the exchange sends to the caller an intermittent ring, corresponding to that which is emitted by the receiver ring loudspeaker. If the receiving subscriber is ready to receive the call, he performs what will be called "a hookup procedure", which will permit a caller to establish contact with the receiver. This is generally done, in cellular telephones, by pressing a button or by lifting a cover which protects the keyboard or in similar ways, or, if the receiver is a standard apparatus, by lifting the earpiece. As soon as the hookup procedure has been performed, the ring is discontinued, the circuit of the ring loudspeaker being once again open, and the exchange places the caller in communication with the receiver for carrying out the desired conversation. During the conversation, a second loudspeaker--hereinafter "the earphone loudspeaker" --much less powerful than the first-mentioned one, so that it has to be placed close to the ear clearly to distinguish the sounds emitted by it, permits the receiving subscriber to hear the message of the calling subscriber. If the receiver is not switched on, the exchange communicates to the caller, after a given number of rings, that the receiver is not available for communication. Cellular telephones are provided with a power source generally in the form of a battery (though the telephone may also be connectable to an outside power source, such as a car battery, or to a power line), and they comprise a controller, essentially a microcircuit, which controls their operations.

Brief Summary Text (21):

Keeping the above facts in mind, the system according to the invention comprises providing, first of all, in the telephone, particularly the cellular telephone, what will be called hereinafter a "boosted loudspeaker", viz. loudspeaker means that are more powerful than the standard earphone loudspeaker, so that it emits sounds loud enough to be heard in the environment without placing it near the ear. The boosted loudspeaker may be an additional loudspeaker, or the earphone loudspeaker itself, driven, when required, by what will be called a "booster circuit", viz. an additional circuit which delivers more power than the standard one. In non cellular apparatus such boosted loudspeakers are generally provided anyway and are used in telephones to permit to conduct conversations without lifting the earpiece; however, they must be actuated by the subscribers for this purpose. In any case, switch

means, practically transistor means, is provided to switch from the boosted loudspeaker and the earphone loudspeaker, and from both said loudspeakers to the ring loudspeaker, if present, and vice versa, as the case may be.

Brief Summary Text (22):

Means are provided in the telephones according to the invention for the dial call, which is emitted by the telephone exchange when calling the telephone as a receiver, to actuate the boosted loudspeaker instead of the ring loudspeaker. By "telephone exchange" is meant herein the exchange with which the cellular telephone in question is connected. The telephone exchange transmits with the dial call what will be called "a customized call message" (hereinafter, briefly, CCM), that is registered, as will be explained hereinafter, in the memory cell assigned to the particular cellular telephone. The customized call message--be it a sound code or a few bars of music or a spoken message--is heard through the boosted loudspeaker in the environment in which the receiver is located.

Brief Summary Text (24):

Since the boosted loudspeaker draws from the telephone power source more power than the ring loudspeaker, it is desirable, at least in cellular telephones in which the power source is a battery, that it operate for as short a time as possible. Therefore, in an embodiment of the invention means are provided for discontinuing the customized call message and returning to the normal call ring if, after a predetermined short time, the hookup procedure has not been performed. Said means are essentially switch means which switch off the boosted loudspeaker and switch on the ring loudspeaker. In a further embodiment of the invention, said switch means may be actuated by the subscriber, or other switch means may be provided, to keep the boosted loudspeaker switched off and the ring loudspeaker switched on, so that the telephone behaves in a conventional manner, for as long a period of time as the subscriber desires.

Brief Summary Text (25):

In a first embodiment of the invention, when a subscriber wishes to create a customized call message (CCM) or change an existing customized call message, he activates his telephone, dials a predetermined code--a number or a key or a combination of keys -and thus establishes communication with the telephone exchange. When that particular dialing occurs, the telephone exchange places the calling cellular telephone--by means already present for the registration of messages--in communication with the memory cell assigned to it and actuates registration means in the memory cell to register sounds or a words which the calling cellular telephone sends. These are registered in a particular section of said memory cell as a customized call message, to be sent as hereinbefore described when another telephone calls.

Brief Summary Text (40):

One particular instance of this embodiment is represented by a hands-free set modified to function as the add-on device. The term "hands-free set" in this application means any device which, in conjunction with a cellular phone, a radio phone or a regular

phone, enable the user to hold a conversation without having to hold telephone in his hand in the course of the conversation. By "hands-free set" we also refer, specifically but not exclusively, to hands-free car cellular units and hands-free sets for cellular carphones which are designed to enable a hands-free conversation in a car. To this end, a controller is added to the hands-free set. Such controller, among other things, causes the switching between the hands-free set's loudspeaker which, in this particular embodiment functions as boosted loudspeaker, the telephone ear loudspeaker and the ring loudspeaker.

Brief Summary Text (51):

In a form of the invention, the telephone which creates a customized call message is a cellular telephone.

Brief Summary Text (55):

Preferably, the said telephone is a cellular telephone. In this case, the power required by the boosted loudspeaker can be provided by available cellular telephone batteries, as long as it is required for limited periods of time.

Drawing Description Text (9):

FIG. 7 is a schematic illustration of an add-on device plugged to a cellular telephone according to an embodiment of the invention; and

Detailed Description Text (3):

FIGS. 1a and 1b schematically illustrates the connection between a caller and a receiver. In the drawing it is assumed that the receiver is a cellular telephone, but this, as it has been said, is not necessary. The caller, 10 is illustrated as a conventional telephone but could be a cellular telephone as well. As show in FIG. 1a, the calling subscriber 10 dials to the desired receiving subscriber and the dial call reaches the telephone exchange, schematically indicated at 11. Since the caller is illustrated as a conventional telephone, the dial call is assumed to be transmitted to a telephone exchange through a conventional wire line. Still, it must be stressed that the invention and all the embodiments described in this application are applicable to wireless and radio telephone systems as well. At this point, a customized call message (CCM) previously recorded by the receiving subscriber, as hereinafter explained, is sent by the telephone exchange to the receiving subscriber, as indicated at 14. Now the boosted loudspeaker 17 of the the receiver phone is activated and the CCM is heard through said loudspeaker. So far, there is no direct connection between the caller and the receiver, as schematically indicated by a switch 12 in the telephone exchange, which is shown as open.

Detailed Description Text (5):

FIG. 2 schematically illustrates the creation of a customized call message or the substitution of an old customized call message with a new one. The telephone exchange 11, only symbolically indicated, is shown as comprising a memory cell, indicated at 20, for each subscriber, which memory cell is comprised of various sections like the indicated one 21, in each of which a message can be registered. One of them is shown as having the number of the subscriber's

telephone registered therein. One cell, indicated as 22, is left free for registering a customized call message and one such possible message is marked on the drawing. The telephone, which is assumed in this schematic illustration to be the cellular telephone receiver 13 of FIG. 1a, dials a code, which, as has been said, can be constituted by a number or by the result of actuating a single key or a combination of keys. The call reaches the exchange, as symbolically indicated at 23, and is transferred to the memory section 22, which could be empty or contain a previously registered, customized call message. Telephone 13 then transmits the customized call message which it wishes to register, and this is registered in memory section 22. If an older customized call message was present, it is canceled and substituted by the new one, in an overwrite operation.

Detailed Description Text (6):

FIGS. 3a and 3b schematically illustrate how the communication between a caller and a receiver is established, when the receiver is provided with a customized call message. A power source (PS) 30, which, in the case of a cellular phone will be a battery and in other case may be a connection to a power line, can be connected to three circuits, that of the ring loudspeaker (RC) 31, that of the earphone loudspeaker (low power circuit LP) 32, and that of the boosted loudspeaker (calling message circuit CMC or high power circuit HP) 33.

Detailed Description Text (8):

FIG. 3b schematically illustrates the calling procedure when the receiver has a customized call message registered in the telephone exchange. Position 1 on the time axis indicates the moment in which the call signal (CS) is sent from the exchange. This signal generally is merely a pulse of a certain frequency. When it is received by the receiver, which is assumed to be switched on, switch 34 shifts to position 1 and connects power source 30 to the boosted loudspeaker circuit 33. Then the customized call message (CCM) is sent from the exchange and is heard in the vicinity of the receiver from the boosted loudspeaker. At the end of the message, position 2 on the time axis is reached. At this point, switch 34 shifts to position 2 and connects power source 30 to the ring loudspeaker circuit 33. Since the duration of the message is predetermined and is short, the power consumed by the boosted loudspeaker is limited and can be supplied by a cellular phone battery for a considerable length of time. From position 2, the ring loudspeaker operates until the hookup procedure is carried out at position 3. Said procedure causes switch 34 to shift to position 3 and connect power source 30 to the earphone loudspeaker circuit 32. Thereafter the conversation between caller and receiver is carried out in the normal way. If the receiving subscriber responds promptly to the customized call message and carries out the hookup procedure before position 2 on the time axis is reached, switch 34 will shift directly from position 1 to position 3 and the ring loudspeaker will not be actuated.

Detailed Description Text (13):

Then, the Identified Calling Signal (ICS) is heard through the boosted loudspeake. After a length of time determined by the receiving subscriber, the boosted loudspeaker may be switched to

the normal ring loudspeaker in order to save power if the receiver in question is a cellular phone drawing his power from a battery.

Detailed Description Text (21):

If the receiver is a cellular phone drawing his power from a battery, after a lapse of time predetermined by the receiving subscriber the boosted loudspeaker may be switched off and the ring loudspeaker may be activated in order to save power.

Detailed Description Text (28):

FIG. 7b shows a back view of the add-on device after it has been plugged to the telephone apparatus which, in this specific example, is a cellular phone, but can be of any other kind as long as it has an output bus or another outlet to which the add-on device can be plugged.

Detailed Description Text (31):

FIG. 8 shows a variation of this embodiment represented by a hands-free set modified to function as the add-on device. The term "hands-free set" in this application means any device which, in conjunction with a cellular phone, a radio phone or a regular phone, enables the user to hold a conversation without having to hold telephone in his hand in the course of the conversation. By "hands-free set" we also refer, specifically but not exclusively, to hands-free car cellular units and hands-free sets for cellular earphones which are designed to enable a hands-free conversation in a car.

Detailed Description Text (32):

In FIG. 8, a hands-free set 81 is shown plugged to a cellular phone 82. The addition of the controller 83 to the hands-free set, turns the latter into an add-on device which fits the description of this embodiment. Such a controller, among other things, is programmed to cause the switching between the hands-free set's ring loudspeaker and the hands-free set's loudspeaker 84 which, in this particular embodiment, functions as boosted loudspeaker.

Current US Cross Reference Classification (2):

379/207.16

Issued US Cross Reference Classification (5):

379/207.16

CLAIMS:

1. A method for improving the calling procedure of a cellular telephone connected to a telephone exchange having a memory cell assigned to said cellular telephone, said cellular telephone having an earphone loudspeaker, a ring loudspeaker and means for performing a standard hook-up procedure, whereby said cellular telephone is placed in communication with calling telephones through said telephone exchange, said method comprising: creating at least one customized message for said cellular telephone by registering said customized message in memory means; providing a boosted loudspeaker in said cellular telephone; activating said boosted loudspeaker and deactivating said earphone loudspeaker and said ring loudspeaker when said cellular telephone is switched on

but is not in communication with another telephone; activating said boosted loudspeaker and retrieving said at least one customized message when said cellular telephone receives an incoming call, and sounding said retrieved at least one customized message through said boosted loudspeaker; performing said standard hook-up procedure while deactivating said boosted loudspeaker if said boosted loudspeaker is not already deactivated, and activating said earphone loudspeaker; and placing said incoming call in communication with said cellular telephone through said telephone exchange.

3. The method according to claim 1, whereby said at least one customized message is registered in a portion of said memory means comprising an additional memory means coupled to said cellular telephone.

4. The method according to claim 1, whereby said at least one customized message is registered in a portion of said memory means comprising a combination of said memory cell and additional memory means coupled to said cellular telephone.

5. The method according to claim 1, wherein said at least one customized message is selected from the group consisting of: a customized call message formulated by a user of said cellular telephone that identifies said user; an identified calling signal message formulated by said user that identifies one or more known possible callers; a self-identifying outgoing message formulated by possible callers; and an outgoing information service message formulated by said possible callers that contain information for said user.

6. The method according to claim 5, wherein said memory means further comprises said memory cell assigned to said cellular telephone in said telephone exchange and additional memory means coupled to said cellular telephone, and wherein said cellular telephone further comprises an electronic component capable of storing audible messages, said method further comprising the following steps: activating said boosted loudspeaker and said electronic component when an incoming call signal is received by said cellular telephone; retrieving said at least one customized message from said additional memory means if said at least one customized message comprises said customized call message and/or said identified calling signal message, placing said at least one customized message in said electronic component, and sounding said at least one customized message through said boosted loudspeaker; sending said self-identifying outgoing message or said outgoing information service message to said cellular telephone from said telephone exchange and sounding said self-identifying outgoing message or said outgoing information service message through said boosted loudspeaker; and retrieving said self-identifying outgoing message or said outgoing information service message from said electronic component and transmitting to another telephone if said user of said cellular telephone is calling said another telephone.

7. The method according to claim 5, wherein said at least one customized message comprises said customized call message and is formulated and recorded by said user of said cellular telephone.

8. The method according to claim 5, wherein said at least one customized message comprises said identified calling signal message and is formulated and recorded by said user of said cellular telephone.

9. The method according to claim 5, wherein said at least one customized message comprises said self-identifying outgoing message or said outgoing information service message and is formulated and recorded by a party calling said user of said cellular telephone.

10. The method according to claim 1, wherein said memory means comprises said memory cell assigned to said cellular telephone, and said creating of said at least one customized message further comprises the steps of: calling said telephone exchange from said cellular telephone by means of a predetermined code; sending said at least one customized message to said telephone exchange; and registering said at least one customized message in one or more sections of said memory cell assigned to said cellular telephone.

11. The method according to claim 10, further comprising the steps of: sending a call signal from said telephone exchange to said cellular telephone when a caller dials said cellular telephone, thereby activating said boosted loudspeaker; sending a customized call message from said telephone exchange to said cellular telephone; deactivating said boosted loudspeaker and activating said ring loudspeaker at the end of said customized call message or after a predetermined period of time; and deactivating said ring loudspeaker and activating said earphone loudspeaker after said standard hook-up procedure is finished.

13. Apparatus for improving a calling procedure of a cellular telephone having an earphone loudspeaker, connected to a telephone exchange with a memory cell assigned to said cellular telephone, said apparatus comprising: a boosted loudspeaker sufficiently powered to produce sounds in an environment adjacent to said cellular telephone; switch means for connecting a source of power alternatively to at least said earphone loudspeaker and said boosted loudspeaker; means for controlling said switch means; means for signaling said telephone exchange that said cellular telephone is preparing to register a customized message; said telephone exchange including means for placing said cellular telephone in communication with said memory cell when said cellular telephone activates said means for signaling, means for registering said customized message in said memory cell, and means for transmitting said customized message.

17. The apparatus according to claim 13, wherein said apparatus comprises an external add-on device that is coupled to said cellular telephone through an output bus.

18. A cellular telephone with improved calling procedures, provided with a ring loudspeaker and an earphone loudspeaker and located in an environment, comprising: a boosted loudspeaker, sufficiently powered so as to produce sounds that can be heard in said environment of said cellular telephone; switch means for connecting a source of power successively to said boosted loudspeaker, said

ring loudspeaker and said earphone loudspeaker; means for controlling operation of said switch means; memory means; means for registering at least one customized message in said memory means; means for accessing said memory means when a call signal is sent or received, in order to retrieve said at least one customized message; and means for sounding said at least one customized message through said boosted loudspeaker.

19. The cellular telephone according to claim 18, wherein said boosted loudspeaker comprises an additional loudspeaker more powerful than said earphone loudspeaker.

20. The cellular telephone according to claim 18, wherein said boosted loudspeaker comprises an additional circuit driving said earphone loudspeaker with greater power.

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File: USPT

May 7, 2002

DOCUMENT-IDENTIFIER: US 6385303 B1

** See image for Certificate of Correction **

TITLE: System and method for identifying and announcing a caller and a callee of an incoming telephone call

Detailed Description Text (4):

In the first embodiment, the present invention comprises an improved telephone system that reduces call interruptions to a telephone, wherein the call interruptions are produced by a caller placing a call to a telephone. Such a telephone system is shown in FIG. 1. Telephone 100 is connected to the telephone service provider's central office using telephone line 140. Telephone 100 is coupled to telephone line 140 through port 150 for sending and receiving telephone signals to and from the central office. As used in the present invention, "telephone" may refer to a conventional or telephone, a digital telephone, cordless telephone, or a cellular telephone. Furthermore, the telephone functions may be performed by a computer, a personal digital assistant (PDA), a web surfer, or any other system that has a sub-function that acts like a classic telephone.

Detailed Description Text (5):

Telephone 100 further comprises handset 110. Handset 110 comprises a speaker for receiving voice signals and generating an audible sound and a microphone for transmitting voice over the telephone line. In a POTS network, when the handset is located in the cradle of the telephone, the placement and/or weight of the handset 110 maintains hook switch 160 in the open position. Once the handset 100 is picked up by the user, hook switch 160 closes and telephone 100 turns on for placing or answering a call. It is noted that hook switch 160 may be closed by other means, such as the user pressing a "talk" button in the case of a cordless phone. Furthermore, for an ISDN, DSL, WLL, or other networks, the telephone answers the telephone call using means appropriate to that network.

Detailed Description Text (22):

In the second embodiment, the present invention comprises an improved telephone system that identifies the callee of an incoming telephone call. Such a telephone system is shown in FIG. 1. In this embodiment, switch 130 is used for enabling and disabling the callee identification feature. Alternatively, the callee identification feature is activated by lifting handset 110 and entering a numeric code through keypad 120. Such a telephone, without switch 130, is shown in FIG. 2. As described above, the feature may also be activated by a computer connected to the telephone. As used in the present invention, "telephone" may refer to a conventional or telephone, a digital telephone, cordless

telephone, or a cellular telephone. Furthermore, the telephone functions may be performed by a computer, a PDA, a web surfer, or any other system that has a sub-function that acts like a classic telephone.

Detailed Description Text (45):

In the third embodiment, the present invention comprises an improved telephone system that identifies callees of incoming telephone calls by first identifying the caller. Such a telephone system is shown in FIG. 1. In this embodiment, switch 130 is used for enabling and disabling the caller/callee identification feature. Alternatively, the callee identification feature is activated by lifting handset 110 and entering a specific numeric code through keypad 120. Such a telephone, without switch 130, is shown in FIG. 2. As noted above, in an alternate embodiment, the user can enable/disable the caller/caller identification function using a computer system coupled to the telephone system. As used in the present invention, "telephone" may refer to a conventional or telephone, a digital telephone, cordless telephone, or a cellular telephone. Furthermore, the telephone functions may be performed by a computer, a PDA, a web surfer, or any other system that has a sub-function that acts like a classic telephone.

Detailed Description Text (60):

In the fourth embodiment, the present invention comprises an improved telephone system that identifies and announces the caller and/or the callee of an incoming telephone call. Such a telephone system is shown in FIG. 1. In this embodiment, switch 130 is used for enabling and disabling the caller and callee identification and announcement feature. Alternatively, the caller and callee identification and announcement is activated by lifting handset 110 and entering a numeric code through keypad 120. Such a telephone, without switch 130, is shown in FIG. 2. As used in the present invention, "telephone" may refer to a conventional or telephone, a digital telephone, cordless telephone, or a cellular telephone. Furthermore, the telephone functions may be performed by a computer, a PDA, a web surfer, or any other system that has a sub-function that acts like a classic telephone.

Detailed Description Text (81):

In the fifth embodiment, the present invention comprises an improved telephone system and method for self-announcing a caller of an incoming telephone call. Such a telephone system is shown in FIG. 1. In this embodiment, switch 130 is used for enabling and disabling the self-announcing feature. Alternatively, the self-announcing feature is activated by lifting handset 110 and entering a numeric code through keypad 120. Such a telephone, without switch 130, is shown in FIG. 2. As described above, the self-announcing feature may also be enabled and disabled by a computer connected to the telephone. As used in the present invention, "telephone" may refer to a conventional or telephone, a digital telephone, cordless telephone, or a cellular telephone. Furthermore, the telephone functions may be performed by a computer, a PDA, a web surfer, or any other system that has a sub-function that acts like a classic telephone.

Current US Cross Reference Classification (2):

379/207.16

Issued US Cross Reference Classification (5) :
379/207.16

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File: USPT

Mar 26, 2002

DOCUMENT-IDENTIFIER: US 6363144 B1

** See image for Certificate of Correction **

TITLE: Method of administering supplementary services in a communications network

Detailed Description Text (2):

In all the figures of the drawing, sub-features and integral parts that correspond to one another bear the same reference symbol in each case. Referring now to the figures of the drawing in detail and first, particularly, to FIG. 1 thereof, there is shown a communications network KN configured, for example, as a GSM mobile radio network GSM. For this purpose, it includes switching centers VLR/MSC, GMSC, which are interconnected. The switching center VLR/MSC establishes the connection to a mobile subscriber via a base station BS, which is wire-connected to the switching center VLR/MSC, and via an air interface between base station BS and a mobile station MS. The mobile station MS is a communication terminal of the mobile subscriber A, B.

Detailed Description Text (12):

In the case of the call setup according to FIG. 6a, this proceeds from the mobile subscriber A via the mobile station MS (communication terminal). The connection setup message setup reaches the switching center VMSC/M-SSP1 of a visited network VPLMN in whose base station area the mobile station MS is located. In the switching center VMSC/M-SSP1, when there is an activated supplementary service SS, the associated subscriber-specific information O_CSI is made available by the visitor location register VLR. If this is not the case, the call setup takes place without utilizing supplementary services SS.

Field of Search Class/SubClass (3):379/207.16